

# **GIS as a Decision Making Tool, Based on Spatial Distribution of Secondary Schools in Kalutara District with Reference to Population Gravity**

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Human-environment interaction is one of the main topics in every decision that has been taken under the concept of sustainable development. Understanding spatial patterns is one good way of proper decision making when considering the spatial sciences. When it comes to schooling, spatial concepts like population distribution, school density, school distribution, accessibility are commonly used. In the primary and secondary education sector, there is a vast competition in order to get into high standard schools, mainly national or provincial level schools in Sri Lanka. But most of these schools are limited to core areas of the cities based on accessibility and population density. Relief, land cover, land use, climate, drainage, slope and many other factors are effecting on this unequal distribution of both population and service centres like schools. The main objective of the study is to identify the spatial distribution of secondary schools with population gravity. The study mainly depends on secondary data of population by DSDs and the list of secondary schools in the Kalutara district obtained from the Department of Census and Statistics and the Department of Education respectively. Methods of statistical analysis like central tendency, measures of dispersion are commonly used and spatial analysis tools in Arc GIS is used as a tool. To clearly understand the spatial distribution of schools, it is again segmented as National and provincial level. According to Thiessen polygon analysis, it indicates the tolerant boundary of each school in order to depict the coverage. Normal population distribution as well as generalised population density based on DSDs indicate areas of high accumulation of population, and population gravity shows the gravity centre of the population in the Kalutara district based on population between age 05 – 19 considered as the age of schooling. Then the spatial distribution of schools and population gravity by age of 05 to 19 was compared to understand the relationship between these two variables. It is clear in the study that there is an unequal distribution of National and Provincial level schools in the Kalutara district based on population distribution and population gravity.

**Keywords: Clustering, Population gravity**